44. The method according to claim **40**, wherein degumming the silk or silk cocoons comprises the selective removal of sericin from the silk or silk cocoons and using a proteolytic enzyme which cleaves sericin, but produces little or no cleavage of fibroin.

45. The method according to claim **38**, wherein the chaotropic agent is removed by dialysis before gelling to provide the regenerated silk fibroin solution.

46. The method according to claim **45**, wherein the method comprises the step of concentrating the regenerated silk fibroin solution to a concentration of approximately 5-25% w/v prior to gelling.

47. The method according to claim **38**, wherein the regenerated silk fibroin solution is gelled by treating the fibroin solution with an aqueous solution of a gelling reagent or by a combination of gelling reagents, such as, for example, an acid.

48. The method according to claim **47**, wherein the gelling reagent comprises a 1% solution of acetic acid.

49. The method according to claim **48**, wherein gelling takes place for a period of time determined by the depth of penetration of the gellation required calculated on the basis of penetration rate of 18 microns per minute, or approximately 1 mm per hour.

50. The method according to claim **38**, wherein the regenerated silk fibroin solution is gelled to form a hydrogel.

51. The method according to claim **38**, wherein the regenerated silk fibroin material is subjected to one or more freezing cycles.

52. The method according to claim **51**, wherein freezing of the regenerated silk fibroin material comprises zone freezing.

53. The method according to claim **51**, wherein the material is treated in a solution of ethanol.

54. The method according to claim **53**, wherein the ethanol is further removed.

55. An implantable regenerated silk fibroin material, obtainable by the method of claim **54**, comprising the following properties:

- an unconfined compressive tangent modulus of between 0.3-5 MPa at 5% strain;
- an ultimate compressive strength (stress to yield point) of 1-20 MPa;
- an average cumulative non-recoverable deformation of less than 10% after 3 million cycles to a nominal strain of 5% in phosphate buffered saline; and
- a Dynamic Modulus of at least 1.5 MPa after at least 3 million cycles to a nominal strain of 5% in phosphate buffered saline.

56. An implantable regenerated, porous silk fibroin material, obtainable by the method of claim **54**, comprising the following properties:

- an average cumulative non-recoverable deformation of less than 10% after 3 million cycles to a nominal strain of 5% in phosphate buffered saline; and
- pores covering from approximately 10% up to approximately 80% of a cross-section of the material.

57. An implant for the replacement, partial replacement, augmentation or repair of articular cartilage or fibrocartilage comprising the regenerated silk fibroin material prepared according to claim **54**.

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